REMARKS

In the Office Action[1] mailed November 6, 2008, the Examiner rejected claims 36-40, 43, 48, 48, and 54 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,475,369 to Cohen ("Cohen"); rejected claims 41 and 42 under 35 U.S.C. § 103(a) as being unpatentable over Cohen in view of U.S. Patent No. 4,279,709 to McIntyre et al. ("McIntyre"); rejected claims 44-47 under 35 U.S.C. § 103(a) as being unpatentable over Cohen in view of U.S. Patent No. 6,036,833 to Tang et al. ("Tang"); rejected claims 50, 51, and 53 under 35 U.S.C. § 103(a) as being unpatentable over Cohen in view of U.S. Patent No. 5,196,109 to Scott ("Scott"); and rejected claim 52 under 35 U.S.C. § 103(a) as being unpatentable over Cohen in view of U.S. Patent No. 4,932,518 to Bernards et al. ("Bernards").

Applicant presents for the Examiner's consideration new claims 72-96 and cancels claims 36-54 without prejudice or disclaimer thereof. Thus, claims 72-96 are pending in the application.

I. Rejections under 35 U.S.C. §§ 102(b) and 103(a)

Applicant submits that the rejections of claims 36-54 under 35 U.S.C. §§ 102(b) and 103(a) are rendered moot by the cancellation of claims 36-54. Inasmuch as the prior art of record may be relevant to the new claims, Applicant submits the following comments for the Examiner's consideration.

[1] The Office Action contains a number of statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicants decline to automatically subscribe to any statement or characterization in the Office Action.

II. New claims 72-94

New claims 72-94 are patentable over the prior art of record. Independent claim 72, for example, recites a combination including, among other features:

> defining a pattern . . . by: bringing the master electrode in close contact with the electrically conductive surface of the substrate, *such that at least one cavity in the master electrode is defined by the electrically conductive surface of the substrate, the electrically conductive surface of the master electrode, and the insulating pattern layer of the master electrode . . .*
>
> wherein . . . (a) the electrically conductive surface of the master electrode is the anode, the electrically conductive surface of the substrate is the cathode . . . and (c) *the dissolved material is an anode material, which is pre-deposited in the at least one cavity defined in the master electrode,*
>
> wherein *the first material is less dissolvable . . . than the anode material* in the electrolyte solution

(emphasis added). None of the cited references discloses or renders obvious the claimed combination including the master electrode of claim 72.

Cohen discloses electroplating methods that enable the microfabrication of articles having complex structures. Cohen, abstract; and col. 4, ll. 30-42. Cohen disclose a pattern conformable (i.e., deformable) mask that improves contact between the mask and the surface of the substrate to be electroplated. Cohen, col. 5, ll. 21-25 and 51-52. Cohen's mask is also sufficiently durable to enable repeated use. Cohen, col. 5, ll. 28-29. The properties of Cohen's mask enable the creation of complex articles having freeform geometries from thin layers of materials. Cohen, col. 2, l. 60 - col. 3, l. 9.

Cohen teaches that "[one] electroplating article can consist of a patterned mask on an anode." Cohen, col. 7, ll. 47-49. Cohen, however, does not disclose or suggest that the anode (i.e., the electrode) is formed by "bringing the master electrode in close contact with the electrically conductive surface of the substrate, *such that at least one cavity in the master electrode is defined by the electrically conductive surface of the substrate, the electrically conductive surface of the master electrode, and the insulating pattern layer of the master electrode*" (emphasis added), as recited in claim 72. Further, there is no teaching or suggestion in Cohen that the anode material is "*pre-deposited in the at least one cavity defined in the master electrode*" (emphasis added), as required by claim 72.

Cohen's anode may be insoluble, soluble, or include an erodable layer supported by a conductive layer (col. 7, ll. 49-53). Of these types of anodes, only a soluble anode may be redressed, as a soluble anode tends to erode during use. Cohen, col. 7, ll. 54-64. While Cohen's soluble anode material can be redressed, Cohen does not teach or suggest that "*the first material [of the electrically conductive surface of the master electrode] . . . is less dissolvable . . . than the anode material*" (emphasis added), as required by claim 72. It seems that the anode is of the same soluble material as the redressed metal. Cohen, col. 7, ll. 54-64. Further, there is no teaching or suggestion that Cohen's soluble anode is "*pre-deposited in the at least one cavity defined in the master electrode*" (emphasis added), as recited in claim 72.

McIntyre discloses systems and methods for preparing electrodes with porous coatings to reduce cathode over-voltage. McIntyre, abstract; col. 1, ll. 55-57; and col. 3, ll. 47-55. In McIntyre, an admixture of particulate metal and a particulate inorganic,

pore-forming compound is applied to an electrode via flame- or plasma- spraying. McIntyre, col. 3, ll. 60-64; and col. 4, ll. 34-38. The pore-forming compound is then removed, or "leeched," by dissolving the pore-forming compound in an aqueous solution while the electrode is in use in an electrolytic cell, leaving the electrode with a porous coating. McIntyre, col. 3, ll. 64-65; and col. 4, ll. 4-9 and 35-41. McIntyre, however, fails to disclose or render obvious the features recited in claim 72.

Tang discloses an electroplating method for forming platings of nickel free from internal stress. Tang, abstract. Specifically, Tang applies a period reverse pulse to an electrodepositing bath containing a sulfonated naphthalene additive found to reduce internal stresses in the plated nickel. Tang, col. 2, l. 63 - col. 3, l. 6. Tang, however, fails to disclose or render obvious the features recited in claim 72.

Scott discloses an electrolyte solution having improved tolerance to metal ion contaminants and organic impurities, which normally accumulate in the electrolyte solution during use. Scott, abstract. Specifically, Scott admixes a bath of a particular soluble additive agent with an aqueous acidic trivalent chromium electrolyte. Scott, col. 2, ll. 38-54. The additive agent used by Scott includes variations of ethylenediaminetetraacetic (ETDA). Scott, col. 2, l. 54 - col. 3, l. 50. Scott, however, also fails to disclose or render obvious the features recited in claim 72.

Bernards discloses an electroplating solution for depositing copper onto a conductive surface that, when used to coat the through-holes of printed circuit boards, reduces the voltage drop across the through-holes. Bernards, abstract; col. 1, ll. 32-44; col. 1, l. 58 - col. 2, l. 5; and col. 3, ll. 44-50. Bernards' electroplating solution has a particular acid-to-copper (i.e., hydrogen ion-to-copper) weight ratio found to have this

desirable property. Bernards, col. 2, l. 41 - col. 3, l. 15. Bernards, however, also fails to disclose or render obvious the features recited in claim 72.

One problem with the prior art processes, like those disclosed in Cohen, which do not include anode material "pre-deposited in the at least one cavity," is that the anode material is dissolved directly from the master conducting electrode. This leads to undercutting of the insulating pattern layer and eventual failure of the master electrode. By having anode material "pre-deposited in the at least one cavity defined in the master electrode," as recited in claim 72, it is possible to have a substantially inert conducting electrode layer that does not dissolve during the electrochemical process. Further, no undercutting of the insulating layer occurs. Thus, the master electrode can be reused many times, resulting in a more cost- and time-efficient patterning process.

For the foregoing reasons, the prior art of record does not disclose or render obvious the subject matter of new independent claim 72. In addition, new claims 73-96 depend from claim 72, and thus distinguish from the prior art of record for at least the same reasons as does claim 72, as well as for their own features. Applicant respectfully requests favorable consideration of new claims 72-96.

In view of the foregoing, Applicant respectfully requests reconsideration of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our Deposit Account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: March 6, 2008

By: _____
Philip J. Hoffmann
Reg. No. 46,340